RESEARCH ETHICS

Just another drug? A philosophical assessment of randomised controlled studies on intercessory prayer

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The empirical results from recent randomised controlled studies on remote, intercessory prayer remain mixed. Several studies have, however, appeared in prestigious medical journals, and it is believed by many researchers, including apparent sceptics, that it makes sense to study intercessory prayer as if it were just another experimental drug treatment. This assumption is challenged by (1) discussing problems posed by the need to obtain the informed consent of patients participating in the studies; (2) pointing out that if the intercessors are indeed conscientious religious believers, they should subvert the studies by praying for patients randomised to the control groups; and (3) showing that the studies in question are characterised by an internal philosophical tension because the intercessors and the scientists must take incompatible views of what is going on: the intercessors must take a causation-first view, whereas the scientists must take a correlation-first view. It therefore makes no ethical or methodological sense to study remote, intercessory prayer as if it were just another drug.

Over the past 10 years or so, a small number of studies that claim to provide evidence of the healing power of remote intercessory prayer have appeared in reputable medical journals.[1–5] One study that appeared in the holiday issue of the *BMJ* in 2001 even reported evidence that retroactive prayer has positive effects on medical outcomes.[6] Although this study was only half serious, it nevertheless raises fascinating methodological and philosophical questions. Other studies have failed to find any relevant correlation between remote intercessory prayer and desirable medical outcomes.[7–9] According to one literature review, 57% of the studies published before 2000 found that intercessory prayer and therapeutic touch have beneficial medical effects.[10] As these studies are beset by methodological problems, some of which I discuss here, the empirical results are at best, mixed.[11] Medical researchers on both sides of this issue think that it makes sense to study prayer in the same way that we currently run trials to test the safety and effectiveness of new drugs. In this paper, I challenge this assumption by defending three claims.

- Some of these studies were conducted without the informed consent of the patients, which amounts to immoral experimentation on human subjects.[12] The requirement that researchers obtain informed consent creates a special methodological problem because volunteer subjects can bias results.
- The scientific value of the studies is diminished because the researchers conducting them have not taken any measures to prevent intercessors or complete strangers from praying for patients who have been randomised to the control groups.
- Finally, these studies require that the intercessors recruited to pray for patients and the researchers conducting the studies take radically different, even incompatible, views of what is going on.

I argue that it makes no ethical or methodological sense to treat intercessory prayer as if it were just another experimental drug. Some of the methodological lessons drawn from this examination of the studies on remote intercessory prayer may also apply to studies on other alternative treatments, such as therapeutic touch. In this paper, however, I will restrict myself to focusing on intercessory prayer.

INFORMED CONSENT

Harris and colleagues[4] studied patients who were recovering from cardiac surgery. They randomly assigned patients to an intercessory prayer group and a control group, and they organised volunteers into teams to pray for patients in the intercessory prayer group. The intercessors were given the first names of patients, but no further information about them. Neither the patients nor the staff at the hospital were told that the study was being conducted. Instead, the researchers obtained approval from the relevant institutional review board to conduct the trial without the participants' informed consent. The goal was to determine whether the patients receiving intercessory prayer had shorter hospital stays or encountered fewer complications during postoperative recovery than those assigned to the control group. The researchers developed a weighted score (the Mid-America Heart Institute-Cardiac Care Unit Score) to measure the degree to which patients experienced complications during their hospital stays. They found that intercessory prayer had no definite effect on the length of stay in the hospital, but that it did have a statistically significant effect on ease of recovery, as measured by the Mid-America Heart Institute-Cardiac Care Unit Score.

The institutional review board approved the request by Harris and colleagues to proceed

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without the patients' informed consent on the basis of the following argument: as no one outside the research context needs to obtain written consent to offer a remote, intercessory prayer on someone else's behalf, there is no need to obtain consent in the research context either. As if following this lead, other studies also proceeded without obtaining patients' informed consent. For example, Cha and colleagues[5] sought to determine whether intercessory prayer had a positive effect on the outcome of in vitro fertilisation. They randomly assigned patients at an in vitro fertilisation clinic in South Korea to an intercessory prayer group and a control group. This time, photographs of the patients in the intercessory prayer group were given to volunteers in Australia, Canada and the US, who then prayed on a regular basis for the patients to have successful embryonic transfers and pregnancies. Once again, neither the patients nor the staff at the clinic knew that the study was being conducted. In this case, the researchers found that the patients assigned to the intercessory prayer group had a significantly higher rate of pregnancy than those in the control group. In an odd twist, they organised a second tier of prayer groups to entreat God to hear the prayers of the people who were praying directly for the patients.

In another instance, in which researchers proceeded without obtaining informed consent, Leibovici[6] set out to study the effects of retroactive intercessory prayer on patients at a hospital in Israel, who had suffered bloodstream infections between 1990 and 1996. Then in 2000, after randomising these patients into an intercessory prayer group and a control group, he had one unnamed person offer a retroactive prayer for those in the intercessory prayer group. Patients randomly assigned to the intercessory prayer group did better with respect to length of stay in the hospital and duration of fever, but not with respect to mortality in the hospital. Leibovici pointed out that in this case, it would have been impossible to obtain the patients' informed consent. He also argued that it made sense to study the efficacy of retroactive prayer because ''we cannot assume a priori that time is linear, as we perceive it, or that God is limited by linear time, as we are.''[6] Leibovici's results are especially challenging. Should we say that his findings are so crazy that there must be something wrong with the method of randomised control trials? Or should we instead try to find room within our scientific worldview for causally efficacious retroactive prayer?[13] The Leibovici study appeared in the holiday issue of the *BMJ*, which traditionally includes satirical pieces, so that Leibovici's intent may well have been to parody the other prayer studies. But the issue of informed consent is no laughing matter.[12]

Although these studies proceeded without the patients' informed consent, in other cases, researchers did obtain informed consent from people participating in the prayer studies. Although it may be true that outside of the research context, most people would see nothing wrong with praying for another person without that person's consent, there are two compelling reasons why the three studies just described are ethically problematic.

Firstly, regardless of whether such studies pose any risk to patients, respect for the religious views of patients requires us to obtain informed consent. In other prayer studies, when researchers sought the informed consent of experimental subjects, many of them opted out of the studies for personal reasons.[1] Thus, it is reasonable to think that had the patients been given the opportunity to do so, some of them would have opted out of the studies just described. It is possible, for example, that some patients would opt out because they find the studies theologically objectionable. As most of the intercessors in these studies are Christians, patients who are not Christians may also have reasons for not wanting to participate. Respect for the religious and philosophical views of the patients in question requires that they be given an opportunity to withdraw from such a study.

Secondly, how can anyone be sure that patients assigned to the intercessory prayer group will not experience harmful side effects? When researchers argue that intercessory prayer, unlike other experimental drugs, should not be expected to have any deleterious side effects, they are making some controversial and undefended theological assumptions—assumptions that also seem to conflict with the view on correlation before causation (described later). Perhaps God frowns on attempts to study prayer scientifically, and so (to teach presumptuous clinical researchers a lesson) causes people being prayed for to experience health problems worse than before. Outside the research context, intercessory prayer has never been known to have harmful side effects. For all anyone knows, the harmful side effects will occur only in the research context. And as remote intercessory prayer has not, until recently, been studied scientifically, I wonder how anyone can be so sure that such prayer has not had bad effects on health all along. Unless they can somehow rule out these possibilities (and they cannot, at least not without empirical investigation), researchers must admit that patients assigned to the intercessory prayer groups may be subjected to extra health risks. And it is morally objectionable for doctors to subject patients to additional health risks, for research purposes, without their informed consent.

It is worth asking why Harris and colleagues believed it was so important to proceed without the patients' informed consent. They were worried about a particular feature of the design of an earlier study by Byrd. In that study, researchers had sought the informed consent of patients and 12.7% of patients declined to participate.[1] The worry was that the patients who did participate in the study therefore constituted a self-selected group of people who were ''prayer receptive''. If (as seems plausible, from a certain religious perspective) the efficacy of the prayer depends in any way on the receptivity of the patients—for example, if religious believers benefit from intercessory prayer whereas sceptics do not; or if Christians benefit whereas non-Christians do not—then this selection process can influence the results of the study. The researchers worried that volunteer subjects could bias their results. This problem with volunteer subjects is not, however, unique to prayer studies, and has been discussed in other contexts.[14–16] Proceeding without the patients' informed consent is a morally questionable solution to this methodological problem. Unfortunately, the other more recent studies in which researchers have obtained the patients' informed consent have not dealt with this methodological problem at all. A first step, perhaps, would be to survey patients who opt out of such studies to find out why they choose to not participate.

Perhaps some of these ethical and methodological problems can be circumvented by studying the effects of intercessory prayer with animal models, such as household pets recovering from surgery at veterinary clinics. If anything, the possibility of using animal models makes the failure to obtain informed consent from human subjects seem all the more egregious. In fact, other alternative treatments have been tested on animal models.[17]

HOW TO SUBVERT A PRAYER STUDY

One methodological problem confronting all these studies is the problem of background prayer. Many patients in hospital are already being prayed for by friends, relatives and members of their own religious communities. We must also consider the fact that some people issue blanket prayers. For example, someone may offer a prayer for everyone in the world who has a certain type of cancer. The researchers who conducted these studies thought that by randomly assigning

patients to intercessory prayer and control groups, they could filter out any effects of background prayer, the underlying assumption being that patients in both groups would receive about the same amount of background prayer. So what these studies really test is (at most) the hypothesis that a little extra prayer, provided by complete strangers, has a positive effect on medical outcomes. One strange thing about this is that the initial plausibility of the hypothesis seems to rest on the dubious assumption that God cares about quantity—that is, the more the people who pray for a particular result, the more likely it is that God will bring about that result.

Ideally, the best way to test the healing power of intercessory prayer would be to design a study in which some patients are not prayed for at all, whereas others receive the usual background prayer. But how could researchers ever guarantee that patients will not be prayed for at all? The only way to do this would be to make sure that no one (perhaps not even the patients themselves) knows about the patients' illness. But the ethical problems associated with such a study design are pretty obvious.

More serious than the problem of background prayer is that the authors of these studies have not taken any measures to ensure that the intercessors themselves do not pray for patients randomised to the control group. In an ordinary drug trial, there are ways of making sure that no one gives the experimental treatment to those assigned to the control group. In these studies, by contrast, nothing prevents the volunteers from making a blanket prayer for patients in the control group. Indeed, if I were a Christian recruited to one of the prayer teams, and if an experimenter asked me to offer specific prayers for several patients assigned to the intercessory prayer group, I would have qualms. Surely God cares about the suffering of all the patients in the study. Why should I pray for some but not for others? Would a good Christian not pray for everyone who is in need? I, at least, would be tempted to follow the experimenter's instructions, and then sneak in an extra request at the end: ''Please, God, take care of those in the control group, too.'' Of course, if the volunteers did this, that would subvert the entire study—but this is arguably what the volunteers should do, if they are Christian. If patients randomised to the control group receive the same treatment as those in the intercessory prayer group, the study is not testing anything interesting at all. At most, such a study may test the hypothesis that specific prayers, made in reference to the names or photographs of individual people, have medical benefits above and beyond those of general prayers targeting groups of people. If this problem has ever occurred to the authors of the studies under consideration, they do not mention it. This concern is amplified by research showing that laypersons participating in randomised control trials often have difficulty in understanding randomisation.[18]

The worry about intercessors praying for patients in the control groups is also related to the issue of clinical equipoise. The intercessors, not the doctors, give the experimental treatments in these studies and, yet, as they presumably already believe in the existence of a personal God who answers people's prayers, they probably should not be in a state of clinical equipoise, even if the researchers conducting the study are. On the other hand, if the intercessors were in a state of clinical equipoise, we may then wonder whether they should count as offering genuine prayers.

Another methodological problem is that complete strangers who read about these studies in the popular press can well entreat God in their prayers to confound the studies. Indeed, we could even plead with God to mess up the studies retroactively! Strangers who, for whatever reason, think that it is a bad idea to use randomised control studies to study the healing power of prayer could well beg God to ''put those scientists in their place'' by helping patients assigned to the control groups just as much as He helps those assigned to the test groups. Someone may even pray to God to aid the patients in the control groups more than those in the test groups. But in cases where well-meaning people, some of whom are not officially associated with the study, offer intercessory prayers for conflicting outcomes, any experimental outcome at all would confirm the hypothesis that someone's remote intercessory prayer has beneficial effects, and that is the hallmark of pseudoscience. No matter what the results, somebody's prayers will have been answered.

THE CORRELATION BEFORE CAUSATION STANCE

Those who conduct randomised control trials on intercessory prayer seem to approach their work in the following spirit:

> We are not (they may say) aiming to demonstrate the existence of God. Instead, we are just looking to see whether there are any interesting correlations among types of natural phenomena—that is, for correlations between sincere prayer (which is just a type of human behaviour) and various medical outcomes. Sure, there are plenty of problems with experimental design, but these will get ironed out in future studies. And we concede that we have no idea what sort of causal mechanism could underlie the correlations between prayer and desirable medical outcomes (if indeed there are any such correlations).

Harris and colleagues emphasise that although the underlying causal mechanism could involve God, it could also involve some previously undetected force fields that emanate from people when they pray. Several cases exist in which scientists discovered useful correlations (such as that giving lemon juice to sailors can ward off scurvy) without understanding the underlying causal mechanisms. Cases in which drugs have been shown to have certain side effects also exist, even though nobody understands how those side effects are produced. I will call this attitude the correlation before causation stance. No doubt, the explicit adoption of this stance has helped the investigators researching prayer to get their studies published in reputable medical journals. Interestingly, the researchers who have published studies that failed to replicate the earlier positive results also share the correlation before causation stance. These sceptics seem to think that the best response to the studies on prayer is more and better science. The correlation before causation stance does not rule out the possibility of inferring causation from correlation.

A tension, however, exists between the correlation before causation stance and the religious views of the intercessors who offer prayers in the context of these studies. No one who actually prays can, while praying, adopt the correlation-first view. To clarify this point, imagine that at the conclusion of one of these studies, an intercessor confesses that she does not really believe in God. Instead, she believes that by reciting prayers she excites certain force fields, previously undiscovered by science, which in turn have effects on patients at distant locations. Is this participant really praying when she recites the words, given her background belief that she is not really communicating with a personal God? Her presence among the other intercessors should raise doubts on whether the study is really testing the medical effects of prayer. Similarly, if a would-be intercessor adopted the correlation before causation stance, we may not want that person to contribute to the study because she would not really be praying. In some of the studies under consideration, researchers screened potential intercessors by asking them if they believe that when they pray they are communicating

with a personal God. Only those who answered in the affirmative were allowed to serve as remote intercessors. But no one who adopts the correlation before causation stance should answer in the affirmative, because the relevant correlations have not yet been clearly established, and belief in a personal God is belief in an underlying causal mechanism.

Thus, these studies seem to require that the researchers who conduct them and the intercessors who pray for patients take radically different, even incompatible, views of what is going on. To put it somewhat awkwardly, the scientists must, in keeping with the method of randomised controlled trials, take the correlation before causation view—or at least, they must pretend to take this view in print. But then the intercessors would seem like irrational people who are prematurely and dogmatically committed to beliefs about underlying mechanisms even before any interesting correlations have been established. On the other hand, the intercessors must be committed to something such as a causation before correlation view; if they did not already have beliefs about underlying causal mechanisms—if they did not already believe any interesting effects their prayers may have would be brought about by God—we would say that they are not really praying at all. From the religious point of view, the attempt to study prayer in the hope of being able to use it as a clinical tool for bringing about certain results may even seem to betray a lack of trust or faith in God. Is it not impious to treat prayer as if it were a medical technology? The upshot is that the familiar cultural tension between science and religion is reflected in the internal structure of these studies, for it shows up as the tension between the conflicting viewpoints that the intercessors and the researchers must have if the studies are to make any sense at all. The correlation-first view of the scientists and the causation-first view of the intercessors cannot both be correct.

CONCLUSION

Perhaps some of the early studies on remote intercessory prayer represent a ''wedge strategy'' akin to intelligent design theory on the part of people who want to give their religious views an air of scientific authority. Even if the studies were poorly designed and the empirical results inconclusive, the aim could simply be to generate some buzz about prayer on the pages of the most prestigious medical journals. If that is true, it is not clear that scientific sceptics should dignify the work of Harris, Cha and their colleagues by conducting larger and more carefully designed studies that also require treating intercessory prayer as if it were just another drug.

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